REMARKS

Claims 1-28 are pending in the application, and all claims stand rejected.

Claims 1-5, 15, 16, 25 and 26 stand rejected under 35 USC 102(b) as being fully anticipated by Saxe, U.S. Patent No. 4,273,422. This rejection is traversed. More specifically, this rejection is traversed on the grounds that (a) Saxe does not describe "an electrophoretic medium comprising a plurality of particles . . . capable of moving through the fluid upon application of an electric field" as required by all the present claims; (b) Saxe does not describe a suspending fluid "having dissolved or dispersed therein a polymer . . . essentially non-absorbing on the particles" also as required by all the present claims; and (c) Saxe teaches that his polymer system is designed to *inhibit* agglomeration of the electrophoretic particles, but such inhibition of agglomeration would in fact *decrease* the bistability of an electrophoretic display, not increase it as does the present invention. Accordingly, not only does Saxe not anticipate the present claims, it actually teaches away from the present invention.

With regard to point (a), Saxe teaches that a light valve comprising "a plurality of small, anisometrically shaped halogen-containing particles suspended in [a] suspending medium" (see claim 1). Saxe further teaches that the particles are capable of having their orientation changed by application of an electric field, such that in one orientation they intercept more light than in another orientation (see column 1, lines 20-24 and 36-39 of Saxe). The particles remain suspended in the surrounding fluid (column 1, lines 48-54), and there is no indication in Saxe that the particles are intended to move (i.e., translate) through the fluid, as opposed to being moved to various orientations. In contrast, the particles used in the present medium are designed to move through the fluid upon application of an electric field so that after the field has been applied for some time, particles of like charge aggregate adjacent one face of the medium, as illustrated in Figures 1-3. (See further the discussion of point (c) below.)

With regard to point (b), Saxe does not describe a suspending fluid having dissolved or dispersed therein a polymer essentially non-absorbing on the particles. Saxe

requires a copolymer having a sterically unhindered functional group for bonding to or associating with the particles (see, for example, claim 1, fourth paragraph) and a [second] polymer dissolved in the liquid suspending medium and bonded to or associated with said copolymer (see claim 1, last paragraph). Although the second polymer is stated to be "bonded to or associated with said copolymer but not said particles" this does not mean that this second particle will not adsorb on to the particles; since the copolymer bonds to or associates with the particles, and the second polymer bonds to or associates with the copolymer, the second polymer will necessarily be localized adjacent the particles, with the two polymers in effect forming a two-layer polymer shell around the particles. In contrast, the present claims require that the polymer be essentially non-absorbing on the particles.

With regard to point (c), Saxe teaches that, in the light valve cells to which his invention relates, a serious problem is the agglomeration of the particles, which considerably impairs the usefulness of the light valve since it creates inhomogeneities in the suspension and hence changes the light transmission from point to point (see column 2, lines 42-58). Saxe further teaches that his invention is intended to prevent or retard agglomeration by simple chemical means, and is accomplished by the provision of a multi-polymer system as a replacement for the prior art nitrocellulose protective colloid (see column 3, lines 4-9). In contrast, the polymer used in the electrophoretic medium of the present invention does not prevent or retard agglomeration of the electrophoretic particles, since such agglomeration is necessary for formation and maintenance of a stable image in an electrophoretic medium. The present invention is intended to improve the bistability of electrophoretic media, as illustrated in detail in the Examples. As noted above, and as shown in Figures 1-3 of the present application, in each extreme optical state of a medium of the present invention, the particles are agglomerated adjacent one face of the electrophoretic medium, and for good bistability (i.e., so that any image written on the electrophoretic medium by an electric field will persist for a long period after the electric field is removed), it is necessary that the particles agglomerated by the

electric field stay agglomerated, and do not drift out of the agglomerate (floc), since such drifting of the particles out of the agglomerate will cause rapid loss of contrast in the image and thus poor bistability. Accordingly, retarding agglomeration of particles will actually reduce, not improve, the bistability of the display.

It should be stressed that these differences between the electrophoretic medium of the present invention and the light valve medium of Saxe are not merely matters of design choice, but result from the differences between the modes of operation of the two media. Saxe's light valve comprises a plurality of anisotropic particles dispersed in a suspending fluid such that the orientation of the anisotropic particles can be changed by an electric field. In such a medium, it is only necessary to provide some means of keeping the particles separated from one another so that they will not form agglomerates or precipitate out of the suspending fluid; the ideal is to keep the particles uniformly dispersed throughout the fluid as single particles so that the fluid/particles mixture effectively acts as a single continuous phase.

The situation regarding improving bistability in a medium of the present invention is more complex. As discussed in detail in Paragraphs 6-8 of the present application, it is known that settling of the electrophoretic particles plays a major role in limiting bistability of the images written on the display. It is further known that bistability can be improved by increasing the viscosity of the suspending fluid, but that such an increase in viscosity increases the switching time as the display, since the rate at which the electrophoretic particles move through the suspending fluid under a given electric field is inversely proportional to the viscosity of the suspending fluid. The surprising feature of the present invention is that, as illustrated in the Examples, it is possible, by incorporating an appropriate polymer into the suspending fluid in accordance with the present invention, to produce a very large increase in the bistability of an electrophoretic medium with only a modest increase in suspending fluid viscosity and hence switching time. There is nothing in Saxe (in which viscosity of the suspending fluid is not an issue

since the particles do not move through the suspending fluid) to suggest this surprising result.

The various 35 USC 103(a) rejections set out on pages 4-12 of the Office Action are traversed. More specifically, these rejections are traversed for the same reasons as the earlier 35 USC 102 rejection discussed above. There is nothing in Gordon or Albert which would teach a person of ordinary skill in the art to modify Saxe to produce a medium in accordance with any of the present claims. Furthermore, for the reasons set forth above, the skilled person would not combine Saxe, which relates to a light valve in which particles rotate but do not translate through a suspending fluid, with either Gordon II or Albert, both of which relate to electrophoretic media in which the particles translate in the same manner as in the present medium.

For the foregoing reasons, the 35 USC 102 and 103(a) rejections are unjustified and should be withdrawn.

Reconsideration and allowance of all claims in this application is respectfully requested.

Since the normal period for responding to the Office Action expired May 22, a Petition for a two month extension of this period is filed herewith.

Respectfully submitted
/Shipley/
David J. Cole
Registration No. 29629

E INK Corporation
733 Concord Avenue
Cambridge MA 02138

Telephone (617) 499-6069
Fax (617) 499-6200
E-mail dcole@eink.com